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A NOTE ON THE NAME CALAMINTHA

GORDON P. DEWOLF, JR.

THE genus *Satureja*, L. as interpreted in the 8th edition of "Gray's Manual of Botany" includes plants that have been included in four genera: SATUREJA (*S. hortensis* L.); CALAMINTHA (*S. Calamintha*, (L.) Scheele = *C. officinalis* Moench; *S. glabella* (Michx.) Briq. = *C. glabella* (Michx.) Benth.; *S. arkansana* (Nutt.) Briq. = *C. glabella* (Michx.) Benth., var. *angustifolia* (Torr.) DeWolf [*Satureja glabella* (Michx.) Briq., var. *angustifolia* (Torr.) Svenson]; ACINOS (*S. Acinos* (L.) Scheele = *A. arvensis* (Lam.) Dandy; and CLINOPODIUM (*S. vulgare* (L.) Fritsch = *C. vulgare* L.).

Study of material of species of this group known to be in cultivation has convinced me that these four taxa are not congeneric, and that current European practice of recognizing them as distinct genera should be followed. A fuller discussion of the taxonomic aspects of the problem has been published elsewhere (Baileya 2(4): 142-150. 1954 [Jan., 1955]). Here I should like to discuss a purely nomenclatural problem.

In the 52nd volume of Fedde's "Repertorium specierum novarum regni vegetabilis," Heft 2, pp. 144-161, 1943, there appears the second of a series of articles by Erwin Janchen entitled "Zur Nomenclature der Gattungsnamen." My attention was drawn to this paper by the inclusion in the 1952 edition of the "International Code of Botanical Nomenclature," p. 131, of the name *Calamintha*, Lamarck as a *nomen conservandum propositum*, the respective *nomen propositum rejiciendum* being *Clinopodium*, Linnaeus. It seems to me that certain data have been overlooked in the framing of this proposal, and hence, further, and perhaps fuller, discussion is in order.

In the 1943 paper, p. 156, no. 7305, Janchen refers to a paper by Janchen and Neumayer, entitled "Beiträge zur Benennung, Bewertung und Verbreitung der Farn- und Blütenpflanzen Deutschlands" in the "Oesterreichische Botanische Zeitschrift," volume 91, 1942, pp. 209–298, in particular to p. 274. At this place the identity of *Calamintha*, Moench (1794) [non Lamarck! 1778] and *Clinopodium*, Linnaeus is asserted, and their distinctness from *Satureja*, Linnaeus is affirmed. Further, Janchen and Neumayer stated: ". . . Mit Rücksicht auf die Artenanzahl ist *Calamintha* gegenüber dem älteren Gattungsnamen *Clinopodium* auf der Ausnahmsliste zu schützen . . ." They also refer to a paper in the "Acta Horti Gotoburgensis," volume 13, 1939, pp. 335–380, in particular p. 349, in which essentially the same thought is expressed by Handel-Mazzetti.

Objections to this proposal arise on two points:

1. *Calamintha*, Lamarck (1778) is a later homonym of *Calamintha*, Miller (1754) *Calamintha*, Trew (1754) and *Calamintha*, Adanson (1763) (and/or Scopoli, 1772), and is synonymous with *Calamintha*, Miller and *Calamintha*, Trew.
2. *Calamintha*, whether of Miller, Trew, Adanson, Scopoli, Lamarck, or Moench, did not contain any species then ascribed to *Clinopodium*. The two taxa were not confused until 1891 when O. Kuntze reduced *Calamintha*, Moench emend. Bentham to *Clinopodium*, Linnaeus emend. O. Kuntze.

Reference to Pfeiffer's "Nomenclator Botanicus," volume 1, part 1, of 1873 indicates that *Calamintha* was first used as a post-Linnaean name by Adanson, in the "Families des Plantes" of 1763, volume 2, p. 192, for the Linnaean genus *Glechoma*. This same usage was maintained by Scopoli in the first volume of the second edition of the "Flora Carniolica" (1772), at p. 423, where synonymy and a good description of the single species [*Glechoma hederacea*] are given. The next entry should be to the usage of Lamarck in the second volume of the first edition of the "Flore Francoise," 1778, p. 393, no. 432. Pfeiffer missed this, however, so the next actual entry is to Moench's "Methodus Plantas . . ." of 1794.

A note about *Calamintha*, Moench is perhaps in order. In 1794 the "Methodus Plantas Horti Botanici et Agri Marburgensis, a Staminum Situ Describendi" of Konrad Moench was published. In this work, at least so far as the labiates are

concerned, very good generic and specific diagnoses are given. It was used by Bentham during the preparation of his "Labiatum, Genera et Species," of 1832-36, and, in particular, Bentham accepted Moench's circumscription of *Calamintha* over that of Lamarek. As published by Moench, three species were accepted: *C. grandiflora*, (L.) Moench; *C. officinalis*, Moench; and *C. trichotoma*, Moench = *C. Nepeta*, (L.) Savi.

Meanwhile, *Clinopodium* had received a very uniform treatment. In 1753 Linnaeus included three species in his genus, viz., *Clinopodium vulgare*; *C. incanum* = *Pycnanthemum incanum*, (L.) Michx., fide Bentham, "Labiatum . . ." p. 327; and *C. rugosum* = *Hyptis capitata*, Jacquin (ex Jamaica) and *H. radiata*, Willdenow (ex Carolina), fide Bentham, "Labiatum . . ." pp. 104 and 108. Of these three species, *Clinopodium vulgare* has been consistently retained in the genus since its publication, and its immediate relatives have been placed with it.

In 1754 Philip Miller published a three volume, octavo, abridgement of the last folio edition (? 6th, 1752) of "The Gardeners Dictionary." In this work binomial nomenclature was not used, but the generic descriptions are well drawn¹. We are, therefore, faced with the necessity of considering Miller's genera. We find that Miller defined a genus he called "*Calamintha*." The generic circumscription is tolerably specific, and, of the six taxa listed, the first three are the same as those accepted by Moench. They are: *Calamintha vulgaris*, vel *officinarum Germanicae*, of Caspar Bauhin = *C. officinalis*, Moench; *Calamintha pulegii odore, foliis latioribus*, of Paul Hermann = *C. Nepeta*, (L.) Savi; and the *Calamintha magno flore*, of Caspar Bauhin = *C. grandiflora*, (L.) Moench.

When I discussed the taxonomic aspects of this problem in Bailey (l.c.) the name *Calamintha* was ascribed to Philip Miller. This occurred because of ignorance of the fact that also in 1754 Christopher Jacob Trew, in his Nuremburg edition of Elizabeth Blackwell's "A Curious Herbal," which is usually referred to as the "Herbarium Blackwellianum," had used the name *Calamintha*. Trew validated his name by reference to the generic descriptions of pre-Linnaean authors, including Ray and Tourne-

¹ After Tournefort, fide G. C. Druce in Rpt. Botanical Exchange Club of the British Isles 3: 426-428, 1913.

fort. Further he gave two excellent plates: no. 166, *Calamintha montana* = *C. officinalis*, Moench and no. 167, *Calamintha officinalis* = *C. Nepeta*, (L.) Savi.

In the past there has been a good deal of discussion as to the advisability of rejecting all names published in works dated after 1753 which do not use binomial nomenclature. As late as 1935 a formal proposal² was made to the 6th International Botanical Congress that such be done, and a list of proscribed works be made. This seems, however, to have met with no success.³ We are left, then, with the tacit understanding that generic names, so long as validly and legitimately published after 1753, may be taken up even from works not using binomial nomenclature.

In the present case we are concerned with homonymous and/or synonymous names, published in the same year, but in unknown sequence. It behooves us, then, to take up for purposes of nomenclature, the most adequately circumscribed of the two names. Miller provides a generic description in English, and cited, with description, also in English, six species. Trew gave no generic description as such, but validated his name implicitly by reference to previously effectively published generic descriptions, especially those of Ray and Tournefort. Trew also gave two excellent plates of the two species which he accepted and full specific descriptions in Latin and German. Therefore, for purposes of citation I am accepting *Calamintha*, Trew.

Lamarck's circumscription of *Calamintha* on the other hand, is not good, nor does he refer to descriptions by previous authors. The genus may be identified with certainty only by recourse to the included species. Of these, the first two, *C. alpina* and *C. arvensis*, are now placed in *Acinos*; *C. cretica* is referred to *Micromeria*; and only the last two, *C. parviflora* and *C. montana* are now retained, under earlier names, in *Calamintha* (*C. Nepeta*, (L.) Savi and *C. officinalis*, respectively, fide Bentham "Labiatum . . ." p. 387-388).

Until the publication of O. Kuntze (Revisio Generum Plantarum, volume 2, pp. 513-516) in 1891, there was little confusion of the two taxa which may be distinguished taxonomically as follows:

² Wilmott, A. J.—Kew Bull. 1935 66.

³ Little, E. L.—Madrono 7: 240-242, 1944.

Calamintha

Calyx tubular, straight. Verticillasters on relatively long pedicels, sub-secund.

Clinopodium

Calyx tubular, curved. Verticillasters sessile or nearly so.

After the genera were firmly established, with good circumscriptions, by Moench in 1794, in the "Methodus Plantas . . .," they were generally treated as taxa of correlative rank. Bentham treated them as sections of *Melissa*, L. in the "Labiatarum . . ." of 1832-36, and as sections of *Calamintha*, Moench emend. Bentham in the 12th volume of de Candolle's "Prodromus Systematis Naturalis . . ." of 1848. Briquet, in IV Teil, 3 Abteilung, a, of "Die natürlichen Pflanzenfamilien" of 1897, treated them as sections of *Satureja*, L. Neither Bentham nor Briquet considered them synonymous, as did O. Kuntze and Janchen and Neumayer.

Two facts emerge from this discussion. In the first place, *Calamintha* and *Clinopodium*, as originally proposed, and as generally used to 1891, apparently had no species in common. There was, and is today, controversy over the rank of the taxa, but not over their identity or composition. In the second place, the proposal by Janchen is to conserve a poorly circumscribed later name over an adequately circumscribed Linnaean name. Further, the name proposed for conservation is both a later homonym and synonym of earlier names, facts not mentioned by the propositor.

The "International Code of Botanical Nomenclature" (1952), at Article 24, stated: ". . . These names [for conservation] are preferably such as have come into general use in the fifty years following their publication, or which have been used in monographs and important floristic works up to the year 1890 . . ." Up to the year 1890 both *Calamintha*, Moench (non Lamarck) and *Clinopodium*, Linnaeus were in general use for the respective taxa concerned. There was no confusion between them.

Finally, if *Clinopodium*, Linnaeus is declared a *nomen rejiciendum*, those who desire to recognize the taxon which has borne that name as a genus will be faced with the necessity of publishing a new name for it.

For these reasons it is recommended that the proposal for the

conservation of the name *Calamintha*, Lamarck, and the rejection of the name *Clinopodium*, Linnaeus not receive favorable action.—BAILEY HORTORIUM, CORNELL UNIVERSITY, ITHACA.

A REVISION OF THE NORTH AMERICAN GENUS SABATIA (GENTIANACEAE)

ROBERT L. WILBUR

(Continued from page 71)

E. Subsection DODECANDRAE subsect. nov.⁵

Subg. *Plurimaria* Raf., Med. Fl. **2**: 76. 1830, in part, not *Plurimaria* Raf. (as genus), Fl. Tell. **3**: 31. 1837.

Pleienta Raf., Fl. Tell. **3**: 30. 1837, in part, an illegitimate name since its type, designated by Rafinesque, is the same as that of *Sabatia*.

Sect. *Pleienta* (Raf.) Blake, RHODORA **17**: 56. 1915, an illegitimate name.

Dodecandrae Small, Man. SE. Fl. 1049. 1933, a category of undesignated status.

Rhizomatose perennials with at least the secondary and very often the primary branches alternate. Strongly pronounced tendency towards plurimerous flowers ranging from 5-12(-14)-parted. Flowers typically large and pedicels usually longer than 1 cm. TYPE SPECIES: *Sabatia dodecandra* (L.) BSP.

This subsection contains but four species which, except for one species, are restricted to the Coastal Plain of the United States. *S. calycina* occurs in addition on at least two islands of the West Indies.

S. calycina, I feel certain, has very little in common with the species of subsection *Campanulatae* with which it has been formerly associated. Its proper relationship is more aptly shown by grouping it with the rhizomatose, pluripetalous species of the *dodecandra*-alliance. The strongly pronounced tendency for this species to possess flower-parts more numerous than five, the large, often foliose calyx-lobes, the often conspicuous, elongate rhizome, the broad leaves and the broadly campanulate calyx-tube are features of all or most of the *dodecandra*-group

⁵ Subsectio Dodecandrae. Perennes rhizomatibus praeditae. Rami secundarii et interdum primarii alterni. Flores saepe plurimeres, inter 5-partiti et 14-partiti, plerumque in specie una 5-6-partiti, in speciebus aliis ca. 9-partiti, typice grandes, pedicellis quam 1 cm. longioribus. Species typica, *Sabatia dodecandra* (L.) BSP. (*Chironia dodecandra* L.)

and are present in none of the species with which it has formerly been allied. I do not feel that the *Dodecandrae* are so much more strongly differentiated than the other subsections as to warrant sectional rank which Blake accorded to them.

KEY TO THE SPECIES OF SUBSECTION DODECANDRAE

- A. Calyx- and corolla-lobes 5-6-parted or rarely up to 7; corolla-lobes (0.6-) 0.7-1.3(-1.5) cm. long; cauline leaves spatulate, tapering into a much-narrowed, sometimes almost petiolate base. 12. *S. calycina*.
- A. Calyx- and corolla-lobes 7-13-parted, usually 9-12 in number, corolla-lobes (1.2-)1.6-2.4(-3.5) cm. long; cauline leaves elliptic, lanceolate, or linear, the median and upper at least not strongly tapering into an almost petiolate base.
 - B. Upper cauline leaves less than the diameter of the stem or but little wider, very narrowly linear, contrasting strongly with the broadly spatulate, rosulate, basal leaves; leaves thick and succulent, often drying somewhat rugose; the larger roots succulent; calyx-lobes strongly subulate, often succulent and even semicircular in cross-section. 15. *S. bartramii*.
 - B. Upper cauline leaves considerably wider than the diameter of the stem, lanceolate, elliptic, or linear; basal leaves often absent, when present linear to lanceolate, and not strongly contrasting with the lower cauline leaves; leaves drying smooth and usually thin in texture; roots fibrous, non-succulent; calyx-lobes linear, thin and flattened in cross-section.
 - C. Calyx-lobes hyaline-margined; plants strongly stoloniferous; primary branches very often opposite; terminal flower short-pedicellate, usually considerably exceeded by the first internode of the lateral branches arising at the same node. 14. *S. kennedyana*.
 - C. Calyx-lobes not hyaline-margined; stolons usually lacking, if present neither numerous nor strongly developed; primary branches usually alternate; terminal flower typically long-pedicellate, usually about equaling or exceeding the first internode of lateral branch arising at the same node. 13. *S. dodecandra*.

12. ***Sabatia calycina*** (Lam.) A. Heller, Bull. Torr. Bot. Club 21: 24. 1894. *Gentiana calycina* Lam., Encyc. 2: 638. 1788. *Chironia dichotoma* Walt., Fl. Car. 93. 1788. *C. calycosa* Michx., Fl. Bor.-Am. 1: 147. 1803. *Sabbatia calycosa* (Michx.) Pursh ex Sims, Curtis's Bot. Mag. pl. 1600. 1813. *S. gracilis* var. *cubensis* Griseb., Mem. Am. Acad. 11: 521. 1862. *S. dichotoma* (Walt.) Trelease ex Branner & Coville, Ann. Rept. Geol. Surv. Ark. 1888. 4: 204. 1891. *Sabbatia cubensis* (Griseb.) Urb. Symb. Ant. 8: 536. 1921.

Perennial herb (although flowering the first year) (8-)15-40(-50) cm. high, with a slender to thick rhizome (1-)2-4(-10) cm. long, 1-3 mm. in diameter. Stems usually solitary, or sometimes several and clustered, erect, rigid, smooth above or but very slightly ridged, hollow at least below, (1-)2-3(-4.5) mm. in diameter, branching usually restricted to the upper half or third of the stem but may arise from nearly throughout the entire length. Branches generally alternate but commonly opposite

even above along the main stem, ascendent or more typically divaricate, further branching also strongly divergent, thus the plant typically presents a strikingly geniculate aspect, branching usually restricted to the second or third order, usually less than 20 cm. long, bearing but few nodes. Root-system of several to numerous slender, fibrous roots arising from the rhizome or from the base of the stem. Leaves thin, drying very thinly membranous and hence venation conspicuous although only the midvein even slightly elevated beneath. Basal rosette lacking and the lower cauline leaves not conspicuously differentiated in shape from the median or upper leaves and usually the reduction in size is gradual and slight. Leaves ascending or more often strongly spreading, elliptical to broadly spatulate, mostly obtuse but still commonly acute, tapering into a conspicuous, much-narrowed or even petiolate base, (1.5-)2.5-6(-10) cm. long, (4-)10-18(-20) mm. wide. Inflorescence of usually reduced, 1-2-flowered cymules; the flowers appearing loosely arranged and even solitary. Pedicels slender, rigid, inconspicuously 5-7-angled, (1-)3-5(-6) cm. long. Calyx-tube thin, smooth or with veins but very slightly elevated, somewhat scarious or translucent, shallowly crateriform to broadly campanulate, (1.5-)2-4(-5) mm. long. Calyx-lobes oblanceolate to spatulate, or rarely linear, often of unequal size, usually foliaceous, apparently enlarging after pollination, acute to obtuse, thin, membranous, (8-)10-25(-32) mm. long, (1-)1.5-6(-8) mm. wide. Corolla-tube cylindrical, (3-)4-5(-6) mm. long, 2-3 times as long as the calyx-tube, colorless or white to pale pink. Corolla-lobes equaling the calyx-lobes in number, typically 5-6-parted, but occasionally as many as 7, often exceeded in length by the calyx-lobes which are sometimes as much as twice as long, but not uncommonly equaling or even exceeding the calyx-lobes by 1-2 mm., oblong to oblong-spatulate, oblanceolate or elliptic, obtuse or acute, (6-)7-13(-15) mm. long, (2-)3-5(-6) mm. wide, white or more commonly pale rose to pink gradually giving way to white in the area above the triangular, pointed yellow patch at the base of the lobe. Filaments pale yellow, 2-3 mm. long; anthers bright yellow, slender 2.5-3.5 mm. long. Style 1-2 mm. long; stigmatic branches 4-6 mm. long. Capsule almost globose or very broadly cylindrical, 6-10 mm. high, 5-8 mm. in diameter.

Type locality: "Cette plante croît à la Louisiane." Type: the original description states that its author saw it in the herbarium of Jussieu. A photograph in the Gray Herbarium, reputedly of the type, was of a specimen in Lamarck's herbarium.

DISTRIBUTION. Ditches, riverbanks and swampy hardwoods from southeastern Virginia south along the Coastal Plain throughout most of Florida and westward into eastern Texas. Also known from eastern Cuba and the central Cordillera of Hispaniola. Map 12.

In the West Indies this species has been called most often *S. gracilis* var. *cubensis* or *S. cubensis*. However in spite of the geographical isolation and the difference in physiographic

provinces, there has not been pointed out previously, nor have I been able to detect from herbarium specimens, any character that distinguishes the West Indian specimens from those from the south Atlantic and Gulf Coastal Plain. The original publication of the insular representatives in a varietal status with the very different *S. gracilis*, which is but a later synonym of *S. campanulata*, by Grisebach, is especially surprising in view of that author's monographic treatment of the family. Grisebach's varietal name was first treated as a synonym by Gray in the Synoptical Flora and this still seems to be the only defensible stand to take in view of the lack of any known morphological differences. Urban did not discuss the evidence, if any, that caused him to decide upon specific status.

Lamarck's publication doubtless has priority over that of Walter as the portion of the former's work in which *Gentiana calycina* appears is usually dated as April, 1788. Fraser, who carried Walter's Flora back with him and arranged for its publication at his own expense, stated (1789, p. 5) that "after having resided in South Carolina and Georgia nineteen months, I returned to England in the month of March 1788. . . ." This would seem to make certain that it was at least several months after the appearance of Lamarck's name before Walter's Flora could have been published.

REPRESENTATIVE SPECIMENS:—VIRGINIA: Isle of Wight Co., Zuni, *Fernald & Long* 6349 (GH, PENN); Nansemond Co., near Suffolk, *Kearney* 1726 (US); Southampton Co., about Franklin, *Heller* 1114 (GH, MO, NY, PENN, US); Sussex Co., west of Lumberton, *Fernald & Long* 14386 (GH, MO, TENN). NORTH CAROLINA: Brunswick Co., just w. of Wilmington, *Wilbur* 2894 (MICH); Chowan Co., 1.5 mi. e. of Edenton, *Randolph* 659 (CU, GH); New Hanover Co., near Wilmington, *Biltmore Herb.* 3306c (NY, US); Onslow Co., 4.5 mi. s. of Jacksonville, *Fox & Boyce* 3718 (MICH, NCS); Pender Co., n. of Castle Hayne, *Fox & Boyce* 3773 (MICH, NCS); Pitt Co., w. of Grimesland, *Wiegand & Manning* 2560 (CU, GH). SOUTH CAROLINA: Berkeley Co., 10 mi. ne. of Moncks Corner, *Godfrey & Tryon* 872 (GH, NY, US); Dorchester Co., along the Ashley River, *Correll* 5378 (DUKE, F, MO, NY, TENN, US); Georgetown Co., 1.5 mi. w. of Andrews, *Godfrey & Tryon* 555 (DUKE, F, MO, NY, TENN, US); Horry Co., Myrtle Beach, *Coker*, 29 July 1946 (NCU, NY); Williamsburg Co., s. of Kingstree, *Wiegand & Manning* 2562 (CU, GH). GEORGIA: Baker Co., in western portion of county, *Eyles* 7185 (DUKE, GH); Dougherty Co., vicinity of Albany, *Pollard & Mazon* 532 (NY, US); Early Co., about 4 mi. se. of Blakely, *Harper* 1910 (F, GH, MO, NY, US). FLORIDA: Alachua Co., River Sink, *Murrill*, 21 May 1939 (MO, US); Columbia Co., without exact locality, *Hitchcock*, 1898 (F, MO); Duval Co., near Jacksonville, *Curtiss* 4373 (F, MO, NY, US); Lake Co., Eustis, *Nash* 2063 (GH, MICH, MO, MT, NY, US); Levy Co., Rosewood, *Garber*, June 1886 (BRU, F,

NY, US, YU); Orange Co., 7 mi. se. of Fort Christmas, *O'Neill* 25 June 1925 (FLAS, US); St. Johns Co., near Tocoí, *Curtiss* 2230 (CU, F, FLAS, GH, MO, NY, SMU, US, YU). ALABAMA: Mobile Co., Magazine Point, *Dougan*, 19 June 1914 (MO). LOUISIANA: Calcasieu Parish, vicinity of Lake Charles, *Allison* 324 (NY, US); East Baton Rouge Parish, near Baton Rouge, *Joor*, 22 May 1874 (F); Orleans Parish, New Orleans, *Drummond* 222 (GH, K). TEXAS: Harris Co., Houston, *Hall* 510 (BRU, F, GH, MO, NY, US). CUBA:—Oriente Province: Monte Verde, *Shafer* 8719 (NY, US); in Cuba Orientali, *Wright* 412, 1856–57 (TYPE-NUMBER of *S. gracilis* var. *cubensis*) (F, GH, MO, NY). DOMINICAN REPUBLIC: Cordillera Central, Prov. de la Vega, Constanza, in Cienaga de los Hoyos, c. 1200 m., *Ekman* 13919 (GH, MO, NY, US); prope Farabocoa, c. 550 m., *Fuertes*, June 1912 (GH); prope Constanza, *Türkheim* 3368 (GH, MO, NY, US); Cordillera Central, Prov. de Azua, Valle del Yanque, *Ekman* 13700 (NY).

13. *Sabatia dodecandra* (L.) BSP., Prel. Cat. N. Y. 36. 1888.

Perennial herb (10–)30–70(–100) cm. high, with a slender to robust, often somewhat branched rhizome 4–10(–15) cm. long, 2–4 mm. in diameter. Stems solitary or several arising in a cluster, erect, terete and smooth or somewhat angular and slightly ridged, hollow, (1–)2–3(–4) mm. in diameter. Branches usually restricted to the upper third or half of the stem, typically alternate, or more rarely, on unusually robust plants, the primary sometimes opposite; ascendent to strongly spreading, forming an angle of from 30–70 degrees with the stem, 5–15(–20) cm. long, rigid. Root-system of slender, definitely non-fleshy, wiry roots 5–10 cm. long and generally considerably less than 1 mm. in diameter. Commonly, especially in the south, with one to few, slender, superficial rhizomes, or more rarely stolons, 2–10 cm. long, 1–2 mm. in diameter bearing small rosettes of few to numerous, thin, slender, oblanceolate, obtuse to acute leaves 1.5–4 cm. long. Basal rosettes absent from the base of the aerial stem, the lower cauline leaves neither densely clustered nor strongly contrasted in either size or shape with those borne several nodes higher up on the stem. Cauline leaves spreading to ascendent, non-succulent, in texture drying from thin and membranous to even somewhat thick and chartaceous, smooth, not rugose, with 1–2 pairs of usually inconspicuous veins paralleling the midvein which is typically elevated beneath; leaves only gradually reduced above, in length ranging from twice exceeded by the internodes to 3–4 (or more) times surpassed by them, lanceolate, linear, elliptic, or oblong, acute to obtuse, clasping to merely sessile, (1.5–)2.5–4(–7) cm. long, (4–)5–12(–20) mm. wide; the lowermost sometimes narrowly spatulate with long tapering almost petiolate base. Inflorescence almost invariably of 1–several, reduced, 1–2-flowered cymules but rarely complete with three flowers; the flowers loosely arranged and thus appearing solitary on erect, rigid, slightly angled pedicels (1–)3–6(–11) cm. long and about 1 mm. in diameter. Calyx-tube crateriform, somewhat turbinate or campanulate, with nerves typically somewhat elevated, (1.5–)2–3(–4) mm. long, usually green but sometimes straw-colored. Calyx-lobes thin, flat, drying smooth, linear, narrowly oblanceolate or even spatulate, ranging from

rather inconspicuous to large and somewhat foliaceous, acute, (0.4–) 0.8–1.8(–2) cm. long, one-fifth as long to slightly exceeding the corolla in length, 1–2.5 mm. wide. Corolla-tube (4–)5–7(–8) mm. long, usually 2–4 times the length of the calyx-tube. Corolla-lobes (7–)9–12(–13) in number, elliptic, oblanceolate, or oblong, acute to obtuse, (1.2–)1.6–2.4(–3) cm. long, (3–)5–8(–10) mm. wide, usually not overlapping each other when fully expanded, deep rose-purple, rose-pink, pink, or more rarely white, with oblong to somewhat triangular yellow patch at base of lobe, the patch sharply 3-lobed or even irregularly toothed, usually bordered by thin red line except in albinos. Anthers bright yellow, slender, 3–5 mm. long; filaments yellow, slender, 3–5 mm. long. Stigmatic lobes slender, 5–9 mm. long; style 3–5 mm. long. Capsule cylindrical, 6–10 mm. high, 4–6 mm. in diameter.

Some indication of the considerable variation within this species may be deduced from the fact that in the past fifty years three species have been segregated from it. The variation is such, that with but a few sheets upon which to base their conclusions, it is not surprising that the various authors have been convinced of the distinctness of the entities that they were publishing. The several hundred specimens of this species examined by me from nearly one hundred stations extending from Connecticut to Louisiana are quite diverse and at the same time it is all but impossible to define any of the various tendencies that have attracted the interest of botanists in the past.

After the belated recognition of the specific status of the entity formerly called *S. decandra* in 1900, the next species to be segregated from the all-inclusive *S. dodecandra* (= *S. chloroides*) was *S. foliosa* Fern. in 1902. What eventually became a syntype of this species was sent to the Gray Herbarium by the collector, A. H. Curtiss, who afterwards distributed the duplicates as *S. chloroides* according to the determination of Fernald. The latter became more impressed with the features of the southern plant after observing similar variation in specimens collected by J. Donnell Smith in South Carolina. He described it as a species especially emphasizing the (1) more stoloniferous habit, (2) leaves equaling the internodes, (3) foliaceous calyx-lobes. The calyx-lobes in both the numerous duplicates collected by Curtiss and those of Smith are certainly large, ranging in size from one-half or more commonly three-quarters as long as the corolla-lobes or in a few instances even exceeding them. This character has proven most variable and the variation is

so great within the same colony and even on the same plant that it is of but little diagnostic importance. For example, the variation of large series of specimens collected (*Webster & Wilbur 3583*) along the eastern bank of the Blackwater River just across from Milton, Florida, the locality from which one of the syntypes was collected, ranges rather uniformly between having calyx-lobes one-fifth to about three-quarters as long as the corolla-lobes.

Small (1903) proposed another species based largely upon two collections from central Georgia which he called *S. harperi*, in honor of the original collector. The supposed distinguishing characters were calyx-lobes less than half the length of the corolla and supposed features of the leaf which are in reality highly variable. Small restricted the range of *S. foliosa* to Florida and Alabama which excluded one of the syntypes. *S. harperi* was said to range from South Carolina to Florida and west to Louisiana. In the previous month Harper, in his account (*Bull. Torrey Club* 32: 338-339. 1903) of these same collections, referred to them as *S. foliosa* upon the authority of Fernald who had examined them. Harper pointed out at that time that "the two species (i.e., *S. foliosa* and *S. dodecandra*) are very closely related differing perhaps in habitat as much as in any other way" in that "*S. dodecandra* seems to be mostly a maritime plant, while the usual home of *S. foliosa* is in creek and river swamps." Fernald had informed Harper also that *S. dodecandra* was not represented in the Gray Herbarium from south of North Carolina and this restricted range was presented in the Seventh Edition of Gray's Manual.

Blake (1915) concluded that *S. foliosa* and *S. harperi* were conspecific. At the same time he proposed a new species, *S. obtusata*, from central Georgia. The distinctive features were said to be oblong leaves with rounded apices and non-clasping bases which nearly equaled the internodes. He emphasized that *S. foliosa* (including *S. harperi*) had "considerably longer calyx-lobes" and the sketch accompanying the description of *S. obtusata* showing part of the type indicates that the calyx-lobes extend barely one-third the length of the corolla. None of the supposed differences pointed out by Blake is distinctive, as they are but minor variations which are

well within the range of variability of the southern population. Several of these features appear within the individual sheets taken from one stand. The diagnostic importance of clasping versus sessile leaves has been overemphasized in the past. Robustly developed plants throughout the range of the species may possess clasping or semi-clasping leaves.

In the last edition of Gray's Manual (1950), the range and habitat of *S. dodecandra* was stated as "saline, brackish or rarely fresh marshes and meadows, Fla. to La., n. on or near Coastal Plain to s. Ct." However, of all the many sheets that Fernald annotated, mostly in 1916, there is only one from south of North Carolina that he considered at that earlier date to be *S. dodecandra* and that, a very fragmentary specimen of Buckley from Alabama, seems quite inadequate for satisfactory determination. In spite of a return to the extensive range for *S. dodecandra* by Fernald, it is not certainly to be inferred that he had necessarily abandoned any attempt to distinguish the entities since fresh-water habitats are implied by Fernald to be the exception for the species which is anything but the case in the South.

I am convinced that it is impossible to recognize *S. dodecandra*, *S. foliosa*, *S. harperi*, and *S. obtusata* as four distinct entities regardless of rank. In general, the material examined from stations ranging from Connecticut to just north of Charleston, South Carolina, is characterized by having the internodes from half-again to twice or more as long as the leaves and this variety seems for the most part to be rather closely restricted to brackish habitats or at least seldom gets very far from the coast. The variety that occurs from South Carolina to Florida and westward to Louisiana is characterized by having shorter internodes which rarely exceed one and a half times the length of the leaves and more often than not are equaled or exceeded by them. Its habitat is inland along river banks and borders of ditches and streams. Most of the specimens examined have been easily separable by this morphological criterion and by several additional tendencies that are little more tangible than the "certain indescribable grace" of E. L. Greene. Rather unsatisfactory specimens were seen from St. Vincent Island and Tampa Bay, Florida, which have been tentatively determined

as *S. dodecandra*, the only specimens so identified by me from south of South Carolina. From the southeastern corner of this last-mentioned state three collections are available and they, too, leave considerable to be desired in the matter of providing an ample basis for positive determination. There are few complete or even modern collections known from Alabama, none at all from Mississippi, and but very few from Louisiana.

In spite of the obvious need for intensive fieldwork and an accumulation of numerous well-prepared collections from throughout the entire range of the species before this group will be satisfactorily understood, it is believed that the treatment suggested here will serve as a more natural and at the same time more useful arrangement until this necessary research is accomplished and may prove a better point of departure than previously has been available.

KEY TO THE VARIETIES OF *S. DODECANDRA*

Internodes usually exceeding the leaf in length, commonly 1.5 to 3 times longer than the leaf; stolons rarely present but if present then only weakly developed; plants usually of brackish habitats, coastal from Connecticut to South Carolina (and perhaps locally to Florida)

13a. *S. dodecandra* var. *dodecandra*.

Internodes usually equaled in length by the leaf or nearly so, commonly less than the leaf in length and very rarely exceeded by it as much as 1.5 times; stolons commonly present and often numerous and well developed; plants of river-banks, ditch and stream margins, inland from South Carolina to Louisiana. 13b. *S. dodecandra* var. *foliosa*.

13a. *Sabatia dodecandra* (L.) BSP., var. *dodecandra*

Chironia dodecandra L., Sp. Pl. 190. 1753. *Chlora dodecandra* (L.) L., Syst. Nat. ed. 12. 2: 267. 1767. *Chironia chloroides* Michx., Fl. Bor. Am. 1: 147. 1803. Illegitimate as it was merely a substitute name. *Sabbatia chloroides* (Michx.) Pursh, Fl. Am. Sept. 1: 138. 1814. *S. dodecandra* (L.) BSP., Prel. Cat. N. Y. 36. 1888. *Pleienta leucantha* Raf., New Fl. 4: 92. 1838. *P. dodecandra* (L.) Raf. ex B. D. Jackson, Ind. Kew. 2: 561. 1894.

Rarely stoloniferous and stolons when present scarcely developed; internodes usually exceeding the leaf in length, commonly 1.5-3 times longer. TYPE LOCALITY: "in Virginia." Type: *Clayton 120* (British Museum); Phototype seen in collection of Gray Herbarium. DISTRIBUTION: Salt or brackish marshes from Connecticut south along the coast into South Carolina and perhaps locally to Florida. Map 13.

REPRESENTATIVE SPECIMENS:—CONNECTICUT: Middlesex Co., Saybrook, Thompson, 20 Aug. 1891 (NY). NEW YORK: Rockland Co., Iona Island, Muenscher & Curtis 5939 (CU); county unknown, Long Island, White Mills,

Poggenburg, Aug. 1886 (GH). NEW JERSEY: Atlantic Co., Port Republic, *Long 10486* (GH); Bergen Co., Hackensack marshes, *Eaton*, Sept. 1860 (YU); Burlington Co., New Gretna, *Chrysler*, 30 Aug. 1926 (CU, RUT); Cape May Co., first of Fishing Creek Bogs, *Walker 1653* (NA, US); Hudson Co., Granton, *Sickle*, 1 Aug. 1894 (US); Monmouth Co., Avon-by-the-Sea, *Kaufman*, 25 Aug. 1904 (YU); Ocean Co., east of Silverton, *Long 38148* (PENN). DELAWARE: Sussex Co., s. of Rehoboth Beach, *Hood 2378* (FLAS). MARYLAND: Anne Arundel Co., Furnace Branch, *Plitt*, 5 Aug. 1902 (GH); Caroline Co., between Choptank River and Bethlehem, *Killip 7279* (US); Cecil Co., ca. 1.5 mi. s. of Elkton, *Long 57046* (GH); Charles Co., Stump Neck, *Turpin 474* (US); Harford Co., 0.25 mi. n. of Bush River Station, *Shull 344* (GH, MO, NY, US); St. Marys Co., St. Marys River 3.7 mi. from St. Mary, *Walker 3888* (US); Somerset Co., Kings Creek, *Holmes*, 24 July 1890 (US); Talbot Co., 5.5 mi. se. by s. of Easton, *Earle 3075* (PENN, WVA); Wicomico Co., Salisbury, *Smith 302* (MT, NY); Worcester Co., Stockton, *Rusby*, Aug. 1889 (NY). VIRGINIA: Fairfax Co., near mouth of Occoquan Creek, *Ulke*, 1 Aug. 1910 (US); James City Co., about 5 mi. from Toano, *Menzel 193* (GH); Nansemond Co., s. of Reid's Ferry, *Fernald & Long 13423* (GH, US); Norfolk Co., near Northwest, *Fernald & Long 13997* (GA, GH, MO); Princess Anne Co., Cape Henry, *Egler & Ryan 40-183* (NY). NORTH CAROLINA: Carteret Co., between Core Creek and Adam's Creek, *Hill 171* (DUKE); Chowan Co., near Edenton, *Godfrey 5346* (GH, US); Craven Co., 2 mi. sw. of James City, *Randolph 862* (CU, GH); Currituck Co., marsh at Sligo, *Godfrey 5279* (DUKE, GH, US); Dare Co., Kill Devil Hills, *Fox 144* (MICH, NCS); New Hanover Co., Carolina Beach, *Biltmore Herb. 3305c* (GH, MICH, MO, NCU, NY, PENN, US); Pasquotank Co., Elizabeth City, *Kearney 1996* (US); Tyrrell Co., Fort Landing, *Radford 4622* (NCU). SOUTH CAROLINA: Charleston Co., north of McClellanville, *Godfrey & Tryon 722* (DUKE, F, GH, MICH, MO, NY, PENN, TENN, US). FLORIDA: Franklin Co., St. Vincent Island, *MAtee 1835A* (US); Hillsborough Co., Tampa Bay, *Leavenworth* (GH, NY). The material upon which these Florida stations are reported is rather unsatisfactory for certain identification but they seem to belong to the otherwise more northern population.

13b. *Sabatia dodecandra* (L.) BSP., var. *foliosa* (Fern.) comb. nov.

Sabbatia foliosa Fern., Bot. Gaz. **33**: 155. 1902. *S. Harperi* Small, Fl. SE. U. S. 928. 1903. *Sabatia obtusata* Blake, RHODORA **17**: 54 pl. 112. 1915.

Commonly stoloniferous and the stolons often numerous and well-developed; internodes usually equaled or exceeded by the leaves, commonly the leaves as much as 1.5 times as long as the internodes. TYPE LOCALITY: "Muddy banks of the Blackwater River, near Milton, Florida." Syntype and lectotype: *Curtiss 5928* (GH). DISTRIBUTION: River banks, ditches and stream and pond margins inland from South Carolina southward into northern Florida and westward into Louisiana. Map 13.

REPRESENTATIVE SPECIMENS: SOUTH CAROLINA: Beaufort Co., Bluffton, *Mellichamp*, 1887 (US); Berkeley Co., 10 mi. ne. of Moncks Corner, *Godfrey & Tryon 876* (DUKE, F, GH, MO, NY, PENN, TENN, US); Charleston Co., 17 mi. w. of Charleston, *Duncan 5802* (GA); Colleton Co., Cottageville, *Hunt 1648* (CHARL, MICH.); Jasper Co., Ridgeland, *Mohr*, 14 Nov. 1893 (US); Marion Co., east of Nichols, *Wiegand & Manning 2561* (CU, GH); Orangeburg Co., North

Edisto River, *Smith*, 9 Aug. 1884 (F, GH, MO, US); Williamsburg Co., 6 mi. s. of Kingstree, *Godfrey & Tryon* 369 (DUKE, F, GH, MICH, MO, NY, PENN, TENN, US). GEORGIA: Bullock Co., swamp of Big Lott's Creek, *Harper* 964 [SYNTYPE of *S. harperi*] (GH, MO, NY, US); Candler Co., 6 mi. ne. of Metter, *Pyron & McVaugh* 713 (GA, US); Charlton Co., Traders Hill, *Wright* 878 (CU); Decatur Co., between Forest Falls and Bainbridge, *Harper* 1196 [SYNTYPE of *S. harperi*] (GH, MO, NY, US); Dodge Co., between Copeland and Rhine, *Harper* 1876 (F, GH, MO, NY, US); Early Co., about 2 mi. e. of Restler, *Harper* 1912 (F, GH, MO, NY, US); Grady Co., about 4 mi. w. of Whigham, *Wise*, 30 June 1940 (FLAS); Jenkins Co., about 3 mi. w. of Millen, *Pyron & McVaugh* 968 (GA, US); Laurens Co., 12 mi. s. of Wrightsville and 6 w. of Adrian, *Pyron & McVaugh* 3056 (GA, NA); Long Co., 3 mi. sw. of Ludowici, *Wilbur & Webster* 2756 (MICH); McIntosh Co., Darien, *Wiegand & Manning* 2564 (CU); Mitchell Co., 12 mi. ne. of Camilla, *Thorne* 5784 (CU); Montgomery Co., north of Mt. Vernon, *Harper* 1866 (F, GH, MO, NY, US); Telfair Co., near Lumber City, *Biltmore Herb.* 3305d [TYPE-number of *S. obtusata*] (US). FLORIDA: Gadsden Co., sw. of Havana, *Small*, *Small & DeWinkeler* 11387 (NY, US); Jefferson Co., 2 mi. nw. of Lamont, *Webster & Wilbur* 3631 (MICH); Madison Co., 1 mi. w. of Greenville, *Wiegand & Manning* 2565 (CU, GH); Nassau Co., Boulogne, *Hume & West*, 14 July 1933 (FLAS); Santa Rosa Co., near Milton, *Curtiss* 5928 (CU, FLAS, GH-SYNTYPE of *S. foliosa*, KSC, MO, NCU, NY, SMU, US); Taylor Co., 14 mi. nw. of Perry, *Webster & Wilbur* 3635 (MICH). ALABAMA: Mobile Co., Mobile, *Harvey* (US); Dallas Co., Selma, *Biltmore Herb.* 3305a (US); Washington Co., 2 mi. s. of Wagarville, *Webster & Wilbur* 3496 (MICH). LOUISIANA: Calcasieu Parish, Lake Charles, *Tracy* 3453 (F); St. Landry Parish, Opelousas, *Carpenter* (GH); St. Tammany Parish, vicinity of Covington, *Arsène* 11706 (US).

14. *Sabatia kennedyana* Fern., RHODORA 18: 150. fig. 98c. 1916. *S. Kennedyana*, f. *candida* Fern., RHODORA 18: 151. 1916. *S. Kennedyana*, f. *encycla* Fern., RHODORA 24: 180. 1922.

Perennial herb (15-)30-65(-80) cm. high, arising from slender, easily broken rhizome about 2-3 mm. in diameter and up to 12 cm. long. Stems usually solitary or occasionally 2 or more arising together, erect, stiffly rigid, terete, smooth, ridgeless throughout, hollow below, 2-4(-6) mm. in diameter. Branches typically restricted to the upper third or half of the stem, the primary, at least in well-developed plants, typically opposite, additional ramifications, when present, mostly alternate; usually rather strongly ascendent forming an angle of about 20-40(-50) degrees with the stem, generally 5-15(-30) cm. long, slender, rigid, further branching also typically stiffly geniculate. Root-system a dense mass of non-fleshy, very slender, white to straw-colored roots 5-10 cm. long, 1 mm. or less in diameter. Typically with few to several or occasionally with numerous slender, decumbent stolons initiated as superficial rhizomes 2-8(-12) cm. long, 1-2 mm. in diameter, bearing few to several slender roots and at the tip a rosette of numerous, ascendent to erect, usually very narrowly linear or oblanceolate leaves 10-15 times as long as broad, 2-6(-15) cm. long, 3-8(-15) mm. wide, acute to acuminate, strongly long-tapering to the nearly petiolate base. Leaves thin, non-succulent, drying brittle, smooth, thinly chartaceous in texture, venation obscure except for the midvein which is somewhat elevated

beneath; the basal leaves, when present, and the lower cauline very similar in size and shape to those of the stolon-borne rosettes; the cauline strongly ascendent and only gradually reduced above, stems almost equally leafy throughout, typically lanceolate or narrowly linear, weakly clasping or sessile, acute to acuminate, slightly callose-tipped, (1.5-) 3-5(-10) cm. long, (2-)4-10(-16) mm. wide, usually about (5-)7-12(-15) times as long as wide, ranging from about (0.5-)2-4(-5) times as long as the internodes. Inflorescence composed of complete or reduced cymules; the terminal flower typically shortly pedicellate and usually greatly exceeded by the first node of the lateral branches. Flowers borne on erect, slender, smooth pedicels (0.5-)1-5(-7) cm. long and about 1 mm. in diameter. Calyx-tube crateriform or shallowly campanulate, thin, smooth or rarely with a few nerves slightly elevated, (2-)3-4(-4.5) mm. long, green to almost straw-colored. Calyx-lobes linear, (5-)6-10(-18) mm. long, 0.5-1.5 mm. wide, thin, very flat in cross-section, acute, slightly hyaline-margined, strongly ascendent, green. Corolla-tube cylindrical, 5-8 mm. long, 2-3 times as long or about 2-4 mm. longer than the calyx-tube, pale yellow without, darker within. Corolla-lobes (7-)9-12 in number, (12-)18-24(-26) mm. long, (4-)7-10(-13) mm. wide, obovate-spatulate, cuneate-obovate, or more nearly oblong, tapering gradually to broad 3-5 mm. base, broadly obtuse or rarely somewhat emarginate, usually overlapping, rose-pink, pink, or rarely white, with an often 3-pointed oblong yellow patch usually about 4-7 mm. long, except in white flowers this area bordered by a dull red to reddish-brown line. Filaments slender, pale yellow, (2-)4-6(-7) mm. long; anthers linear, slender, bright yellow, 3-6 mm. long; style 2-6 mm. long; stigmatic lobes slender, (4-)5-7(-9) mm. long. Ovary rather conspicuously half-exserted from the corolla-tube. Capsule broadly cylindrical, 7-11 mm. long, 4-7 mm. in diameter. TYPE LOCALITY: "shore of Wequawket Pond, Centreville, Barnstable Co., Massachusetts." TYPE: *E. F. Williams s.n.* (GH!). DISTRIBUTION: Sandy and peaty margins of ponds and streams in southern Nova Scotia, eastern Massachusetts, Rhode Island, southeastern North Carolina and northeastern South Carolina. Map 14.

S. kennedyana, recognized only in 1916 as being distinct from the widespread *S. dodecandra*, is a rather easily identifiable entity with as distinctive morphological features as any of the four species within the subsection. It is distinguishable by a combination of several strong tendencies rather than by one or even a few strong and constant features. These characters are: stems almost perfectly smooth and in well-developed specimens the primary branches typically opposite; the terminal flowers, usually short-pedicellate, typically being much exceeded by the first internode of the lateral branches; leaves thin, drying thinly chartaceous, brittle, smooth; corolla-lobes broadest near the tip, more or less obovate-spatulate, calyx-lobes linear and

hyaline-margined, thin and flat in cross section; calyx-tube broad, thin, unribbed. Some of these characteristics are shared by other species but the combination is unique. In addition, the frequency of the stolon-borne rosettes and their development in size is much greater in this species than in any of the others within the subsection. Therefore, in spite of the late date of recognition of the distinctness of this species, it appears to be a strongly characterized biological entity and not merely the result of too diligent a study of too few specimens.

When originally described, the plant was known only from Rhode Island and Massachusetts. Four years later Fernald discovered it in Nova Scotia where it is apparently fairly common in Yarmouth County on the southern side of that peninsula. An even greater range extension for this species into southeastern North Carolina and northeastern South Carolina can now be reported. H. L. Blomquist, R. K. Godfrey and I made a large collection of what proves to be this species along the sandy bank of the Waccamaw River in Columbus County, North Carolina in the summer of 1951. After studying these specimens, it was then possible to recognize that a few other collections from the same general area which previously had been rather uncritically passed over as merely abnormal *S. dodecandra* were in reality this species which I had not expected to see from south of the fresh-water ponds of southern New England. Disjuncts between the eastern Carolinas or southeastern Virginia and Delaware, New Jersey or New England are numerous but examples matching that of *S. kennedyana* are certainly much less common. One species with a somewhat similar distribution as shown by existing records is *Scirpus longii* Fern. This sedge is at present known from one station in eastern North Carolina, again from New Jersey to Massachusetts, and finally reappears in western Nova Scotia. Fernald (*Rhodora* 45: 55. 1943.) wrote that this species of *Scirpus* "has shown itself to be an old Coastal Plain type which, like so many other species, became isolated in Nova Scotia before the late Tertiary or early Pleistocene submergence of the continental shelf."

The possibility that the name *S. kennedyana* may be synonymous with *Chironia decandra* Walter is included in the discussion

of *S. bartramii* and need not be repeated here. Walter's name had best be treated, it is believed, as a *nomen dubium*.

REPRESENTATIVE SPECIMENS:—NOVA SCOTIA: Yarmouth Co., Gravelton, *Fernald & Long 22266* (F, GH, MO, NY, PENN, YU, US). MASSACHUSETTS: Barnstable Co., Harwich, *Fernald PL. EX. GRAYANAE 387* (in many herbaria); Bristol Co., Dartmouth, *Sturtevant, 26 July 1889* (CU, F, MO); Essex Co., Newburyport, *Chamberlain, June 1899* (NY); Norfolk Co., Weymouth, *Seymour 4373* (DUKE, WIS); Plymouth Co., in inundatis ad Plymouth, *Oakes* (GH, NY, US, YU). RHODE ISLAND: Kent Co., Warwick, *Bailey, 27 July 1883* (US); Washington Co., South Kingston, *Congdon* (MO, NY, YU). NORTH CAROLINA: Columbus Co., between Ash and Old Dock just west of the Waccamaw River, *Wilbur 2892* (MICH); New Hanover Co., Wilmington, *McCarthy, 1885* (GH, NCU, US). SOUTH CAROLINA: Horry Co., near Ocean Drive, *Schallert, 12 June 1933* (NY).

15. *Sabatia bartramii* sp. nov.⁶ *Sabbatia chloroides* var. *coriacea* Ell., Sk. Bot. S. C. & Ga. 1: 286. 1817. Type (CHARL!). *S. chloroides* var. *flexuosa* Ell., l.c., excluding synonym. Type (CHARL!) ? *Sabbatia chloroides* var. *erecta* Ell., l.c. There is no specimen representing this variety in Elliott's herbarium. The original description is practically a translation of Walter's description of *Chironia decandra*, which is cited in synonymy. ? *Pleienta flexuosa* [Ell.] Raf., Fl. Tell. 3: 30. 1837, without basionym. ? *Sabbatia chloroides* β *stricta* Griseb., Gen. et. Sp. Gent. 125. 1839. The description is again almost word-for-word the same as that of *Chironia decandra* Walt., which Grisebach cited in synonymy. *Sabbatia dodecandra stricta* (Griseb.) Mohr, Bull. Torrey Club 24: 26. 1897. *Sabbatia decandra* sensu Harper, Bull. Torrey Bot. Club 27: 432. 1900.

Perennial herb (25-)50-80(-100) cm. high, arising from slender to thick rhizome 4-6 or more cm. long, 3-5 mm. in diameter. Stems almost invariably solitary, erect and rather rigid, terete, more or less smooth and ridgeless or but finely nerved, hollow, 2-5 mm. in diameter. Branches usually restricted to the upper third of the stem, typically alternate but occasionally opposite at one or two of the primary nodes; ascendent usually forming an angle with the stem of from 30-45 degrees, usually 10-20(-40) cm. long, typically unbranched and bearing but one flower, or if branched seldom with more than 2 flowers. Root-system of numerous clustered, fleshy roots 5-12 cm. long, 1-2 mm. in diameter bearing but few, slender, fibrous lateral roots. Leaf-texture thick, succulent, drying rather thickly chartaceous or rarely the lowermost becoming thinly membranous upon drying, venation obscure excepting the midvein which is often elevated beneath, the apices often callous-mucronate. Leaves

⁶ *Sabatia bartramii* sp. nov. Perennes a rhizomatibus. Folia crassa, succulenta, saepissime siccitate plus minusve rugosa; radicalia rosulata, spathulata vel oblanceolata; caulina lanceolata vel linearia, ultima supreme plerumque angustiora quam caulis diametro. Flores plerumque 10-12 partiti, calycis lobis setaceis vel subulatis, succulentis, saepe semiteretibus. Specimen typicum in savanna prope Pensacolum, in Florida, legerunt Webster et Wilbur, sub numero 3577, et in Herb. Universitatis Michiganensis conservatum.

strongly dimorphic in appearance with an abrupt transition from the basal to the cauline; the basal strongly spreading, conspicuously rosulate, oblanceolate, somewhat oblong, or more typically broadly spatulate, strongly but gradually long-tapering to the almost petiolate base, obtuse or rarely acute, (2.5-)4-8.5(-13) cm. long, (4-)12-17(-22) mm. wide; cauline strongly ascendent and becoming even closely appressed, the lower lanceolate but gradually, or even abruptly, reduced to linear or even very narrowly linear above, where their width is often about equal to, or less than, the diameter of the stem, (1.5-)2.5-5(-6.5) cm. long, (1-)2-8(-15) mm. wide. Inflorescence of reduced cymules of commonly one and more rarely more than two flowers borne on slender, rigid, finely ridged pedicels (3-)4-8(-12) cm. long, terminal or arranged on usually undivided lateral branches of one or more rarely of several nodes. Calyx-tube ridgeless, crateriform to campanulate, usually broadly so, occasionally, especially in smaller flowers, somewhat turbinate, (2-)3-4(-8) mm. long, usually straw-colored in strong contrast to the darkly chlorophyllose lobes. Calyx-lobes typically strongly subulate, (4-)8-12(-20) mm. long, often rather succulent, usually drying somewhat rugose-thickened, ellipsoidal below to nearly round above in cross-section, often somewhat revolute, erect, strongly ascendent or but weakly spreading, dark green in color. Corolla-tube cylindrical, (5-)6-8(-9) mm. long, usually about 2-3 times as long as the calyx-tube, apparently pale-yellow externally and darker within. Corolla-lobes (8-)10-12(-13) in number, (16-)22-32(-35) mm. long, (5-)7-10(-12) mm. wide, obovate-spatulate or rarely oblong to elliptic, usually broadly obtuse, deep rose-magenta, rose-pink, rose, or rarely white, with an irregularly but slightly toothed, yellow, oblong patch at the base of the lobe 3-5 mm. long, usually bordered by a dark red line. Filaments slender, (3-)4-6(-7) mm. long, pale yellow; anthers linear, slender, golden-yellow, 5-7 mm. long. Style 4-6 mm. long; stigmatic lobes slender, 7-10 mm. long. Capsule ovoid, 6-8 mm. long, 4-6 mm. in diameter. TYPE LOCALITY: savanna about 9 miles west of Pensacola, Escambia Co., Florida. TYPE: *Webster & Wilbur 3577* (MICH). DISTRIBUTION: Savannas or low pine barrens from southern Georgia and Alabama to southeastern Mississippi and nearly throughout Florida except for the extreme southern tip. Map 15.

This very striking species is recognized at once by the strongly subulate calyx-lobes, which are thickened and semicircular in cross-section; the usually somewhat fleshy leaves; the obtuse, spatulate basal leaves contrasting strongly with the abruptly reduced cauline leaves, the uppermost of which are very narrowly linear being little, if any, broader than the diameter of the stem. These features are in very strong contrast with the thin, flat, linear to foliaceous calyx-lobes of the other southern species of the same area whose upper cauline leaves are always at least several times the diameter of the stem. Also the basal

rosette of those species is either absent or little developed or, if present, the cauline leaves are only very gradually reduced. The rather high percentage of misidentifications of specimens of this species in the past, or the inclusion of material of other species under its name, has been due largely to the key-differences as presented by Small. The distinction first utilized by him was that of the length of the corolla-lobes. In this species, however, the length overlaps very considerably with the other species of the dodecandra-alliance commonly collected in the area. In the last mentioned work he added another key-distinction, that of the shape of the corolla-lobes, which also was poorly chosen, for that floral structure is also extremely variable.

S. decandra, the name that has designated this species for more than fifty years rests upon a binomial published in Walter's "Flora Caroliniana" (1788). Walter's Flora provides very brief diagnoses of the six species of what was then called *Chironia*. Linnean binomials were applied to three of the entities and new ones provided for the remaining species. The characterization of them all is so brief that one is able to place them no more than tentatively even if quite familiar with the genus. Blake stated (*Rhodora* 17: 129. 1915.) that there are now but seven specimens of *Sabatia* in Walter's herbarium, located at the British Museum.

A print has been obtained from the Gray Herbarium of the page bearing all the specimens of *Sabatia* still in Walter's collection. Although the photographic print was not such that absolute determination of all seven existing specimens in the genus could be made, it was more than sufficient to prove conclusively that at present there is among the fragments no material representing the species that we have been calling *S. decandra*.

The seven fragments are tentatively identified from the photograph as follows: 3 specimens of *S. calycina* (Lam.) Heller (= *Chironia dichotoma* Walt.); 2 specimens of *S. difformis* (L.) Druce (= *Chironia lanceolata* Walt.); 1 specimen of *Sabatia dodecandra* var. *foliosa* (Fern.) Wilbur (called *Chironia dodecandra* L. in the Flora); and what appears to be a specimen of *S. stellaris* Pursh (probably passing in Walter's Flora as *Chironia campanulata* L., a species often confused with the annual even by present day authors).

In the absence of an authentic specimen of *Chironia decandra*, one must rely heavily upon the original description which is as follows:

decandra 6. flor. decemfidis colore dodecandrae, foliis linearibus, caule rigido erecto.

This description, as Harper has admitted (Bull. Torrey Club **27**: 432. 1900.), is to say the least "rather brief." However, Harper concluded that since "there is no known plant in the southeastern states which answers it exactly, and as his name for the species is cited in synonymy by both Elliott and Grisebach, no hesitation is felt in taking it up here." I do not believe that Walter's description is sufficient to limit it to the species to which Harper applied it. The characterization of a 10-parted corolla colored like *S. dodecandra* with linear leaves and an erect, rigid stem fits *S. gentianoides* Ell. equally as well as *S. decandra* in the sense of Harper. There are occasionally encountered specimens of *S. dodecandra* that match the few features mentioned and certainly *S. kennedyana*, which formerly was not known from outside of Nova Scotia and southern New England but is now known to be part of the flora of southeastern North Carolina and northeastern South Carolina, might often be briefly described by those same few words.

The species to which Harper applied Walter's epithet is not as yet represented by a single herbarium specimen from South Carolina. In fact I have seen no specimens from north of the Ogeechee River in Georgia and only one specimen from north of the Altamaha River. Harper reports (Bull. Torrey Club **37**: 595. 1910.) having seen this species from a train window in Hampton County, South Carolina at two different locations. The nearest location represented by a herbarium specimen of the plant called *S. decandra* by recent authors is almost 150 miles from Walter's plantation and even Harper's sight records are nearly 100 miles from the area delimited by Walter.

The preface of "Flora Caroliniana" informs one that almost all of the species described were to be found within a radius of fifty miles of Walter's plantation on the banks of the Santee River near the town of St. Stephen. Fraser (1789) adds to our knowledge of the source of materials included in the Flora in the following manner:

The botanical description of many of the plants which I found are contained in the *Flora Caroliniana*; with the author of which, the late Mr. Walter, I became acquainted soon after my arrival in Carolina. He had collected, when I went into that country, plants which afforded him six hundred and forty descriptions. I increased his work, by the specimens I produced to him, to one thousand and sixty; amongst which are upwards to *two hundred new species*, and *thirty new genera*; of all which, as well as the other plants in the *Flora*, I have now dried specimens in my possession, and many valuable living plants. Many of the most valuable specimens and living plants I collected are still remaining in my hands undescribed.

Fraser by his own account spent nineteen months on this trip and collected over thirty thousand specimens. During his travels he ranged "from the south boundaries of Georgia to the northward of Carolina." Upon these journeys he would have had ample opportunity to encounter the numerous species that have puzzled botanists in the past since those species at present are not known from Walter's neighborhood or even from South Carolina. Even so it would appear that most of Fraser's additions to the flora came from the limited area prescribed by Walter.

Lacking authentic material of *Chironia decandra* and in view of the extremely brief and inconclusive original description, it is now impossible to determine the identity of the name. The description is so generalized that it is equally applicable to at least two species known from the area from which most of the specimens in the *Flora* are stated to have been found.

For the reasons stated above I feel that the assignment of Walter's epithet to the pluripetalous southern perennial with subulate calyx-lobes is not justified by the available evidence. I am naming this plant *Sabatia bartramii*. William Bartram prepared an unmistakable sketch of the upper portion of this species which has recently been reproduced (*Amer. Phil. Soc. Trans.* **33**: Plate XXIV. 1943.). It is quite possible that the *nomen nudum* mentioned by Bartram in his "Travels" was this species. More than sixty miles south of the Altamaha River, according to his own estimate, he describes crossing a land of "high open forest of stately pines, flowering plains, and extensive green savannas, chequered with the incarnate *Chironia pulcherrima*, and *Asclepias fragrans* . . ."

REPRESENTATIVE SPECIMENS:—GEORGIA: Appling Co., near Baxley, *Biltmore Herb.* 14965b (US); Baker Co., near Bethany, *Eyles* 7247 (CU, GH); Brantley Co., 3 mi. e. of Nahunta, *Wilbur & Webster* 2746 (MICH); Bryan Co.,

about 2 mi. w. of Pembroke, *McKay*, 14 Aug. 1930 (MICH); Calhoun Co., 5 mi. e. of Arlington, *Thorne 5444* (CV, GA); Charlton Co., near Saddlebag Pond, *Wright 871* (CV); Clinch Co., 4 mi. e. of Homerville, *Eyles 6331* (GA); Cook Co., 0.5 mi. se. of Sparks, *Wilbur & Webster 2691* (MICH); Miller Co., in sw. corner of county just north of Donalsonville, *Duncan 6755* (MICH); Sumter Co., without exact locality, *Harper 461* (F, GH, MO, NY, US); Ware Co., 5 mi. se. of Waycross, *Wilbur & Webster 2737* (MICH). FLORIDA: Alachua Co., Waldo, *West*, 14 June 1927 (FLAS); Baker Co., 9 mi. s. of Macclenny, *West & Arnold*, 12 July 1946 (FLAS); Bay Co., 8 mi. n. of Lynn Haven, *Webster & Wilbur 3623* (MICH); Broward Co., Ft. Lauderdale, *Eaton 798* (F, GH); Clay Co., 2 mi. n. of Goldhead Branch State Park, *West & Arnold*, 15 July 1947 (FLAS); Collier Co., near Fort Shackleford, *Small 8340* (DUKE, GH, NY, TENN, US); Dade Co., Humbugus Prairie, *Small, Mosier, & Small 6885* (NY); DeSoto Co., without exact locality, *Schallert*, 29 July 1940 (TARK); Dixie Co., s. of Oldtown, *West & Arnold*, 11 Aug. 1937 (FLAS); Duval Co., Baldwin, *Nash 2250* (F, GH, MICH, MO, NY, US); Escambia Co., near Pensacola, *Webster & Wilbur 3577* (MICH); Flagler Co., near Andalusia, *Arnold*, 25 June 1942 (FLAS); Franklin Co., near Apalachicola, *Biltmore Distrib. Chapman Herb. 3305b* (GH, NY, US); Gulf Co., 7 mi. n. of Port St. Joe, *Small & West*, 8 Aug. 1935 (FLAS); Hardee Co., near Limestone, *Kirk*, 8 July 1942 (FLAS); Hernando Co., Bayport, *Jones 76* (CV, US); Lee Co., about 8 mi. se. of Fort Myers, *Standley 447* (F, GH, MO, US); Levy Co., 14 mi. se. of Chiefland, *Webster & Wilbur 3640* (MICH); Manatee Co., Manatee River, *Rugel 155* (MO, US); Nassau Co., 0.5 mi. s. of Callahan, *Wright 873a* (CV); Orange Co., without exact locality, *Fredholm 5374* (GH, US); Osceola Co., Kissimmee, *Eaton 1062* (F, GH); Palm Beach Co., 1 mi. n. of Lake Park, *Hannon*, 12 June 1948 (FLAS); Pasco Co., south of Denham, *Hood 3572* (FLAS); Polk Co., Polk City, *McFarlin 5979* (MICH, TEX); St. Johns Co., St. Augustine, *Garber*, July 1876 (US); Sarasota Co., Myakka, *Barrett 45* (US); Volusia Co., near Seville, *Curtiss 6843* (GH, KSC, MO, NA, NY, US); Wakulla Co., 1.5 mi. s. of Sopchoppy, *Webster & Wilbur 3629* (MICH); Washington Co., 4 mi. w. of Chipley, *Webster & Wilbur 3611* (MICH). ALABAMA: Baldwin Co., 1 mi. n. of Stapleton, *Webster & Wilbur 3522* (MICH); Mobile Co., Crichton, *Sawada*, 18 Aug. 1933 (NY); Monroe Co., Claiborne, *Blanton 53* (GH, MT, NO, NY, OKLA, US). MISSISSIPPI: Jackson Co., about 4 mi. e. of Moss Point, *Webster & Wilbur 3466* (MICH).

II. Section PSEUDOCRIONIA Griseb., Gen. et Sp. Gent. 125. 1839.

Subg. *Plurimaria* Raf., Med. Fl. **2**: 76. 1830, in part, not *Plurimaria* Raf. (as genus), Fl. Tell. **3**: 31. 1837.

Pleienta Raf., Fl. Tell. **3**: 30. 1837, in part, an illegitimate name since its type is the same as that of *Sabatia*.

Lapitheia Griseb., Prodr. **9**: 48. 1845.

Subg. *Pseudochironia* (Griseb.) Blake, RHODORA **17**: 56. 1915.

Annuals. Floral parts plurinervous, 7-12-parted. Flowers sessile or very nearly so and borne either solitarily or more typically in compact, capituliform cymes. Anthers about half-twisted laterally even prior to pollen-discharge and never becoming revolute. TYPE SPECIES: *Sabatia gentianoides* Ell.

The two species comprising this group are very strongly differentiated from the other eastern American species belonging

to the subtribe *Erythraeinae* with strongly bilobed, linear stigmatic branches. Their distinctive features are such that Grisebach, after first placing the only species known to him in his section *Pseudochironia* coordinate with all the other species, finally six years later decided upon generic status calling it *Lapitheia*. Bentham (1873) maintained this group as the genus *Lapitheia* as did Gilg (1895). Small treated the group as of generic rank in all of his work. Blake (1915) discussed the differences and concluded that "the group is better treated as of subgeneric value." Subgeneric status still seems to express best the phylogeny and relationship of the group without belittling the distinctive features that so distinguish the two species from all others in the genus. The two groups of species are here considered to be of sectional rank.

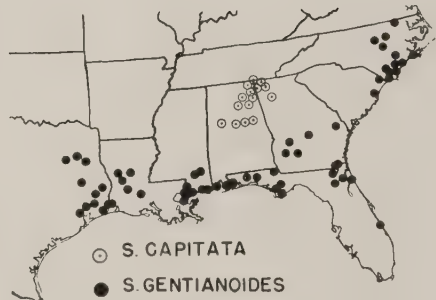
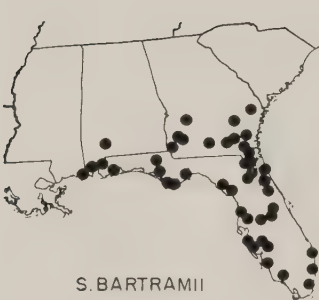
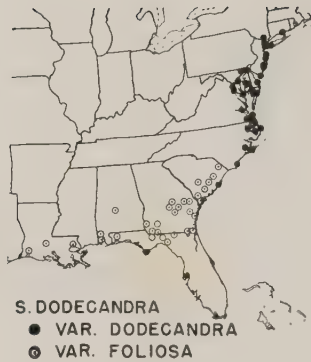
The two species are both very easily distinguished from the species comprising the rest of the genus and also from each other. *S. capitata*, known only from the ancient Appalachian highlands, is believed to be more primitive than the Coastal Plain *S. gentianoides* which possesses greatly reduced and modified foliage in comparison to that of the supposedly more primitive species.

KEY TO THE SPECIES OF SECTION PSEUDOCHIRONIA

- A. Basal and cauline leaves not strongly contrasted in either size or shape; cauline leaves oblong, elliptic, or rarely weakly lanceolate, usually broader than 1 cm. and never less than 5 mm. wide, several to many times the diameter of the stem in width; calyx-lobes linear, their margins parallel for most of their length, erect. 16. *S. capitata*.
- A. Leaves strongly dimorphic, the basal strongly contrasting to those of the stem in both size and shape; cauline leaves very narrowly linear, less than 5 mm. wide, usually equaling or less than the diameter of the stem, 20–60 times longer than broad; calyx-lobes subulate, the tips often recurved or reflexed. 17. *S. gentianoides*.

16. *Sabatia capitata* (Raf.) Blake, RHODORA 17: 54. 1915. *Pleienta capitata* Raf., Fl. Tell. 3: 30. 1837. *Sabbatia Boykinii* A. Gray in Chapm., Fl. S. U. S. 354. 1860. *S. gentianoides* β *Boykinii* (A. Gray) Wood, Am. Bot. & Flor. 266. 1870. *Lapitheia Boykinii* (A. Gray) Small, Fl. SE. U. S. 929. 1903. *Lapitheia capitata* (Raf.) Small, Man. SE. Fl. 1051. 1933.

Erect annual (15–)30–45(–70) cm. high; stem 1–4 mm. in diameter, rigid, hollow, more or less terete to slightly 4-angled, smooth or often, upon closer examination, with few, very slightly raised lines extending between the internodes. Branches usually present except in depauperate plants, either opposite or alternate but in well-developed plants probably more commonly opposite, often restricted to the upper third of the stem



MAPS 13-16. Map 13, upper left; map 14, upper right; map 15, lower left; map 16, lower right.

but occasionally branching nearly to the base, varying greatly in length ranging from (1-)3-8(-30) cm. long, rather strongly ascendent forming an angle of about 20-40 degrees with the stem. Root-system of several to numerous fibrous roots usually about 3-8 cm. long, the larger of which are often somewhat woody and up to 2 mm. in diameter. Leaves weakly if at all dimorphic, the basal not strongly contrasting with the cauline in either shape or size, thin, not at all succulent, drying thin, smooth and brittle chartaceous, venation rather conspicuous with 3-5 nerves at least somewhat elevated beneath, the midvein especially so; the basal, when present and well-developed, obovate to broadly spatulate, sometimes rosulate, obtuse, tapering to the almost petiolate base, not strikingly contrasted to those above, 2.3-5 cm. long, 1-2 cm. wide, the cauline broadly, or more rarely narrowly, oblong, elliptic, or weakly lanceolate, usually about 2-4 times longer than broad, about 5-15 times as wide as the diameter of the stem, weakly ascending, strongly spreading or even somewhat reflexed, (2.5-)3.5-5(-6.5) cm. long, (7-)10-20(-25) mm.

wide, broadly obtuse or sometimes even acute, typically the base somewhat clasping. Inflorescence cymose, terminating the main stem or the lateral branches. Flowers sessile or very nearly so, borne singly or in few to several (2-5 or very rarely more)-flowered compact clusters. Each flower closely associated with 2 subtending oblong to elliptic bracts about 1-2 cm. long. Calyx-tube broadly campanulate, 3-6 mm. long, smooth, unnerved, membranous. Calyx-lobes linear, 4-10 mm. long, and about 1-2 mm. wide, erect or strongly ascendent, often strikingly unequal, 7-12 in number, about 1-2 times the length of the calyx-tube and about half the length of the corolla. Corolla-tube about 5-7 mm. long or about 1-2 mm. longer than the calyx-tube, probably pale greenish-yellow. Corolla-lobes about 12-25 mm. long, 5-13 mm. wide, elliptical, obovate or spatulate, acute to more typically rounded-obtuse, pale rose-pink, pink, or rarely white with an unlobed, pale yellow semicircle at the base about 1-2 mm. high. Filaments slender, (2-)3-4 mm. long; anthers stout, slightly twisted laterally even prior to pollen discharge, bright yellow, (2.5-)3-5(-6) mm. long. Style 3-5 mm. long; stigmatic branches spatulate, 6-9 mm. long. Capsule apparently ovoid. TYPE LOCALITY: "Unaka and Cherokis Mts." TYPE: unknown. DISTRIBUTION: Open hardwoods on hillsides and ridges in southwestern North Carolina (?), northeastern Georgia, southeastern Tennessee, and northeastern and central Alabama. Map 16.

This species, strikingly different from all others, has by far the most restricted range of any in the genus. It is also the only species which is completely limited to the southern Appalachian uplands, a biological reservoir from which spread much of the ancestral flora of eastern North America.

This species was first discovered in the Unaka and Cherokee Mountains along the southern portion of the boundary between North Carolina and Tennessee and was very fully described by Rafinesque in the "Flora Telluriana" (1837). However, like most of that author's work, it was apparently not given serious attention and the identity of his name was not made known for over seventy-five years. The species was first effectively brought to the attention of "reputable botanists" nearly twenty-five years after Rafinesque's description when it was published as *S. Boykinii* in Chapman's Flora (1860), and attributed to Gray. This was based upon material in Torrey's herbarium sent by Dr. Boykin from "middle Georgia." There it was seen by Gray and according to the annotation was apparently intended as a joint publication of Torrey and Gray. The remaining synonymy of this little collected species involves merely various combinations with either of these basionyms.

REPRESENTATIVE SPECIMENS:—NORTH CAROLINA: County unknown but probably Cherokee Co., "from Cherokee" collector and date unknown (MO). GEORGIA: Bartow Co., 3.8 mi. n., 14° w. of Allatoona Dam, *Duncan 8613* (GA); Catoosa Co., Catoosa Springs, *Biltmore Herb. 4512b* (US); Walker Co., Pigeon Mt., *Wilson 172* (NY, US); Whitfield Co., base of Dick's Ridge, *Wilson 142* (NY, US); County unknown, *Boykin* (GH, NY, US, TYPE and ISOTYPES of *S. boykinii*). TENNESSEE: Marion Co., Cumberland Mts. at Whiteside, *White, 22 July 1895* (US). ALABAMA: Blount Co., without exact locality, *Rugel, Oct. 1843* (NY); Cherokee Co., Lookout Mt., *Freeman, 11 July 1905* (KSC); Clay Co., Millerville, *Pollard & Mazon 173* (NY, US); DeKalb Co., Valley Head, *Biltmore Herb. 4512e* (US); Etowah Co., near Coosa River, *Mohr, July 1880* (US); Jackson Co., Eliza, *Graves 1191* (MO); Marshall Co., 3.2 mi. n. of Boaz, *Hubricht B1668* (FLAS, MO); Shelby Co., Calera, *Everts* (NY); Talladega Co., s. of Childersburg, *Hood 285* (FLAS); Tuscaloosa Co., without exact locality, *Smith, July* (US).

17. *Sabatia gentianoides* Ell., Sk. Bot. S. C. & Ga. **1**: 286. 1817. *Pleienta gentianoides* [Ell.] Raf., Fl. Tell. **3**: 30. 1837, without basionym. *Lapitheia gentianoides* (Ell.) Griseb., Prodr. **9**: 48. 1845. *Sabbatia oligophylla* Featherman, Rep. Bot. Surv. S. & Cent. La. **72**. 1871.

Erect annual (15-)30-50(-65) cm. high; stem 1-3 mm. in diameter, rigid, hollow, more or less terete but with fine and irregular internodal ridges. Very commonly unbranched below the terminal inflorescence, but when branched, the branches usually restricted to the upper quarter of the stem, occasionally branched in the lower half or even more rarely with several stems arising from the base; commonly either opposite or alternate but more typically alternate, usually about 5-8 cm. long or rarely up to 20 cm., strongly ascendent forming an angle of about 20-40 degrees with the stem. Root-system of several to numerous slender, fibrous roots 3-8 cm. long and less than 1 mm. in diameter. Leaves thick and somewhat succulent, drying rather thickly chartaceous and rugose, strikingly dimorphic, venation obscure except for the midvein; those of basal rosette wide-spreading, oblong to orbicular-spatulate, typically long-persistent, (1-)2-3(-3.5) cm. long, (4-)8-12(-15) mm. wide, usually about 2-3 times as long as wide, obtuse, rather strongly tapering to the base and therefore appearing petiolate; the cauline very narrowly linear, 20-60 times longer than broad, width equaling or less than the diameter of the stem, strongly ascendent and sometimes even appressed especially in the lower portion of the leaf, (15-)40-80(-100) mm. long, 1-3 mm. wide, acute and slightly callous-tipped, sessile or clasping the stem. Flowers sessile or very nearly so, borne singly at the principal apex or at that of the lateral branches, or more typically in more robustly developed plants, especially at the apex of the principal axis, in few to several (2-5 or rarely even 7) flowered compact clusters. Each flower closely associated with 2 subtending, narrowly linear bracts, (1-)1.5-4(-7) cm. long. Calyx-tube broadly campanulate, (3-)4-6(-8) mm. long, smooth and unnerved, membranous, light green to pale yellowish-green. Calyx-lobes conspicuously subulate, (3-)5-10(-17) mm. long, spreading-ascending, arching outward especially at the tip, often unequal in size, 7-12 in number, 1-2 times as long as the calyx-tube, and usually

about half or less than half the length of the corolla. Corolla-tube 6–10 mm. long, about 1.5–2 times as long as the calyx-tube, pale greenish-yellow, cylindrical. Corolla-lobes (12–)18–24(–30) mm. long, (4–)6–8(–11) mm. wide, elliptical, spatulate to oblanceolate, acute to obtuse, pink to deep rose with an unlobed greenish-yellow area at the base of the lobe 2–3 mm. high. Filaments slender, short, often about half as long as the anthers, 1–3 mm. long, pale yellow; anthers stout, slightly twisted laterally even prior to pollen discharge, golden-yellow, (3–)4–6(–7) mm. long. Style 5–8 mm. long; stigmatic branches spatulate, 4–7 mm. long, 1.5–3 mm. wide. Capsule ovoid, 7–10 mm. high, about 6 mm. wide at the base. TYPE LOCALITY: “in Bullock Co., Georgia.” Type: *Mr. Abbott s.n.* (CHARL.). DISTRIBUTION: Pinelands and savannas along the Coastal Plain from North Carolina south into Florida and west into eastern Texas. Map 16.

This species is unmistakable once the distinctive characteristics of the plant are understood. The combination of a pluripetalous corolla and an annual habit alone set this species off from all the members of Section *Eusabatia*. These two features together with sessile to sub-sessile flowers arranged in capitate to sub-capitate clusters, and the laterally half-twisted anthers (as opposed to revolute) are shared by both *S. gentianoides* and *S. capitata* which together form section *Pseudochironia*. *S. gentianoides* is not only clearly distinguished morphologically by its strongly dimorphic basal and cauline leaves but also geographically by its restriction to the Coastal Plain which contrasts sharply with the southern Appalachian endemic, *S. capitata*. Elliott’s species is one of the most easily recognizable and nomenclatorially least misunderstood of all the species. In spite of this it has been surprisingly often misidentified; ten to fifteen per cent of the specimens that I have seen were misnamed. This is at least in part due to the incomplete ranges published in Small’s *Flora* (1903) “Ga. to Fla.” and also in his *Manual* (1933) “Fla. to Tex. and Ga.” The species is known to range from Texas to Florida and northward throughout eastern North Carolina.

That *S. oligophylla* is a synonym of *S. gentianoides* is strongly indicated by the original description and conclusively shown by a water-color plate drawn for Professor Featherman and preserved at the Gray Herbarium. Featherman thought that it differed from *S. gentianoides* for that species “which it seems to resemble, has no bracts.” *S. gentianoides* does, of course, possess bracts at the base of each flower.

REPRESENTATIVE SPECIMENS:—NORTH CAROLINA: Bladen Co., on Rt. 211, 2.1 mi. ne. of Columbus Co. line, *Fox & Whitford 1867* (NCS); Brunswick Co., 2.5 mi. s. of Grissetown, *Fox & Godfrey 2836* (GH, MICH, NCS, NCU); Carteret Co., Newport, *Godfrey 5789* (GH, US); Columbus Co., 1 mi. se. of Delco, *Fox & Godfrey 2872* (NCS, SMU); Duplin Co., 8 mi. w. of Richlands, *Godfrey 5784* (GH, US) Johnston Co., s. of Selma, *Dlans*, 28 July 1933 (NCU); Nash Co., between Bailey and Middlesex, *Oosting 35574* (DUKE); New Hanover Co., near Wilmington, *Abbe & Spalteholz*, 3 Aug. 1927 (CU, NCU); Northampton Co., near Jackson, *Rhoades*, Aug. 1935 (GH); Onslow Co., near Folkstone, *Alexander*, 25 July 1923 (NCU); Pender Co., Burgaw, *Godfrey 5924* (GH, NCS, US); Wake Co., just w. of Raleigh, *Fox 1828* (DUKE, GH, NCS). Also represented (F, NY) by specimens reputedly from Statesville, Iredell Co., made by M. E. Hyams. These and other Coastal Plain plants known only from the Piedmont by his collections are suspected of having been gathered in the Coastal Plain and distributed with his printed Statesville labels. SOUTH CAROLINA: Georgetown Co., 12 mi. nw. of Georgetown, *Godfrey & Tryon 745* (DUKE, F, GH, MO, NY, TENN, US); Horry Co., 6 mi. e. of Loris, *Wilbur 2902* (MICH). GEORGIA: Bullock Co., without exact locality, *Abbot* TYPE of *S. gentianoides* (CHARL); Calhoun Co., 3 mi. e. of Cordrays Pond, *Thorne 6476* (CU); Charlton Co., 8 mi. s. of Folkston, *Wright 863* (CU); Dodge Co., Eastman, *Biltmore Herb. 4509c* (NY); Sumter Co., without exact locality, *Harper 1121* (GH, MO, NY, US); Worth Co., 3.5 mi. w. of Sylvester, *Thorne 6350* (F, GA, MT, US). FLORIDA: Baker Co., without exact locality, *Curtiss 2233* (CU, F, MO, NY, US, YU); Bradford Co., w. of Starke, *Bratley & Murrill*, 5 July 1940 (FLAS); Clay Co., Doctor's Inlet, *West & Arnold*, 29 June 1939 (DUKE, FLAS, MO, US); Escambia Co., near Ala. state line, *Porter*, 21 July 1938 (FLAS); Franklin Co., near Apalachicola, *Biltmore Dist. Chapman Herb. 4509a* (GH, NY, US); Gulf Co., Wewahitchka, *Chapman* (MO); Indian River Co., 5 mi. n. of Vero Beach, *Woodson & Schery 126* (MO); Jackson Co., w. of Marianna, *Porter*, 21 July 1938 (FLAS); Liberty Co., near Bristol, *Arnold*, 23 July 1940 (FLAS); Nassau Co., Boulogne, *Hume & West*, 14 July 1933 (FLAS); Okaloosa Co., about 3 mi. e. of Crestview, *Webster & Wilbur 3589* (MICH); St. Johns Co., near St. Augustine, *Garber*, July 1876 (BRU, F, NY, US, YU); Walton Co., Argyle, *Curtiss 6484* (CU, GH, MO, NY, SMU, US). ALABAMA: Baldwin Co., 8 mi. s. of Foley, *Webster & Wilbur 3532* (MICH); Butler Co., near Bolling, *Smith*, 28 Aug. 1885 (F, MO, US); Mobile Co., about 12 mi. sw. of Mobile, *Webster & Wilbur 3478* (MICH). MISSISSIPPI: Forest Co., about 8 mi. se. of Hattiesburg, *Webster & Wilbur 3379* (MICH); Hancock Co., Bay St. Louis, *Langlois*, 12 Sept. 1883 (PENN); Harrison Co., Biloxi, *Tracy 7007* (CU, F, GH, MO, US); Jackson Co., 2 mi. e. of Ocean Springs, *Webster & Wilbur 3450* (MICH); Pearl River Co., Picayune, *Reed*, 2 Aug. 1934 (NA); Perry Co., 9 mi. n. of Beaumont, *Webster & Wilbur 3420* (MICH). LOUISIANA: Allen Parish, Oakdale, *Bomhard*, 22 June 1933 (NO); Calcasieu Parish, 3 mi. sw. of Vinton, *Webster & Wilbur 3212* (MICH); Grant Parish, 4 mi. s. of Pollock, *Webster & Wilbur 3258* (MICH); Natchitoches Parish, about 2 mi. s. of Kisatchie, *Correll 9796* (DUKE); Orleans Parish, New Orleans, *Carpenter* (MO); Rapides Parish, Alexandria, *Hale* (BRU, F); St. Landry Parish, Opelousas, *Carpenter* (GH, NY); St. Tammany Parish, 1 mi. n. of Abita Springs, *Pennell 4150* (PENN); Vernon Parish, 2 mi. w. of Leander, *Webster & Wilbur 3241* (MICH). TEXAS: Hardin Co., Sour Lake, *Tharp*, 29 July 1929 (TEX); Harris Co., Houston, *Hall 509* (BRU, F, GH, MO, NY); Henderson Co., without exact locality, *Tharp 2882* (US); Houston Co., Grapeland, *Palmer 14405* (MO, US); Jasper Co., Jasper, *Fisher 32117* (F); Jefferson Co., Beaumont, *Hooks*, 14 July 1931 (TEX); Liberty Co., 21 mi. se. of Cleveland, *Webster &*

Wilbur 3171 (MICH); Orange Co., Orange, *Letterman*, 11 Aug. 1880 (MO); Rusk Co., without exact locality, *Vincent 39* (MO); Smith Co., without exact locality, *Tharp*, 5 July 1924 (TEX); Trinity Co., Big Thicket, *Murray*, 1 June 1938 (NA); Tyler Co., 2 mi. n. of Warren, *Webster & Wilbur 3204* (MICH).

DOUBTFUL AND EXCLUDED SPECIES

CHIRONIA DECANDRA Walt., Fl. Car. 95. 1788. *Nomen dubium*. See discussion under *Sabatia bartramii* Wilbur.

CHIRONIA PULCHERRIMA Bartram, Bartr. Trav. 19. 1791. *Nomen nudum*.

PLEIENTA FASCICULATA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

PLEIENTA QUINQUENERVIA Raf., New Fl. 4: 91. 1838. Perhaps a synonym of *S. calycina* (Lam.) Heller.

PLEIENTA RIGIDA Raf., Herb. Raf. 80. 1833.

SABBATIA ALBEOLA Raf., Cat. Bot. Gard. Transyl. Univ. 15. 1824. *Nomen nudum*.

SABBATIA AMENA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*. Probably a misprint for *S. amoena* (= *S. stellaris* Pursh).

SABBATIA ANCEPS Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

SABBATIA AUSTRALIS Cham. & Schlecht., Linnaea 1: 194. 1826. = *Zygostigma australe* (Cham. & Schlecht.) Griseb., Gen. et Sp. Gent. 50. 1839.

SABBATIA CENTAURIUM (L.) Raf., Casket 1827: 316. f. 29–1827. Publication not seen. Merrill (1949) states that this name was based on *Gentiana Centaurium* L. (= *Centaurium umbellatum* Gilib.).

SABBATIA DECANDRA (Walt.) Harper, Bull. Torrey Club 27: 432. 1900. *Nomen dubium*. See discussion under *S. bartramii* Wilbur.

SABBATIA DECLINATA Raf., Herb. Raf. 69. 1833. *Nomen nudum*. Probably a synonym of *S. stellaris* Pursh.

SABBATIA LINGULATA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

SABBATIA NIVEA Raf., Med. Fl. 2: 77. 1830. Briefly discussed under *S. quadrangula* Wilbur.

SABBATIA OBTUSIF. [obtusifolia] Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

SABBATIA PETIOLATA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

SABBATIA PULCHELA Raf., Herb. Raf. 69. 1833. Publication not seen. Merrill (1949) states that it was listed from "Long Island, New Jersey, Chesapeake Bay" and "= *Sabatia gracilis* Salisb. = *S. campanulata* (Linn.) Britton." However, if it is not the *Centaurium* listed below, it is more likely a synonym of *Sabatia stellaris* Pursh.

SABBATIA PULCHELLA (Sw.) Spreng., Syst. ed. 16. 581. 1825. = *Centaurium pulchellum* (Sw.) Druce.

SABBATIA PUMILA Raf., Herb. Raf. 69. 1833. Publication not seen. Merrill (1949) provides the following information: "nom. Long Island, New Jersey, Chesapeake Bay." Perhaps, judging from the localities, a synonym for *S. stellaris* Pursh.

SABBATIA SIMPLEX Bertol., Misc. Bot. 10: 27. (1842–1863). Publication not seen. A. Gray (Syn. Fl. 2: 116. 1878.) equates this name with *Rhexia stricta* Pursh.

SABBATIA STRICTA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

SABBATIA TENUIFOLIA Raf., Fl. Tell. 3: 30. 1837. *Nomen nudum*.

- SABBATIA UMBELLATA Raf., Fl. Tell. **3**: 30. 1837. *Nomen nudum*.
 SABBATIA VERTICILLARIS Spreng., Syst. ed. 16. 580. 1825. Described from South America. Grisebach (Prodr. **9**: 50. 1845.) equates this name with *Schuebleria stricta* Mart., a synonym of *Curtia gentianoides* Cham. & Schlecht.

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